Draft Summary of the Engineering and Operations Work Group Meeting
Oroville Facilities Relicensing (FERC Project No. 2100)
November 22, 2002

The Department of Water Resources (DWR) hosted the Engineering and Operations Work Group meeting on November 22, 2002 in Oroville and via videoconference and conference call.

A summary of the discussions, decisions made, and action items is provided below. This summary is not intended to be a transcript, analysis of the meeting, or to indicate agreement or disagreement with any of the items summarized, except where expressly stated. The intent is to present an informational summary for interested parties who could not attend the meeting. The following attachments are provided with this summary:

Attachment 1 Meeting Agenda
Attachment 2 Meeting Attendees
Attachment 3 Measuring the Effect of Low Water Temperature and Blanking and Grain Yield
Attachment 4 Project Operations Presentation

Introduction

Attendees were welcomed to the Engineering and Operations Work Group meeting. The meeting agenda and desired outcomes were reviewed. The meeting agenda and list of meeting attendees and their affiliations are appended to this summary as Attachments 1 and 2, respectively.

October 25, 2002 Meeting Summary and Action Items

A summary of the October 25, 2002 Engineering and Operations Work Group is posted on the relicensing web site. The Facilitator reviewed the status of action items from that meeting as follows:

Action Item EO#60	Provide electronic versions of the two reference documents from 1994 and 1995 that outline hydrologic inputs to CALSIM II.
Responsible:	DWR
Status:	These will be distributed via e-mail to those participants with servers large enough to handle 7megabyte file attachments and via regular mail for all others.
Action Item EO#61	Distribute summary of input demands from Bulletin 160 process.
Responsible:	DWR
Status:	This summary will be distributed with the Action Item EO#60 documents.
Carry Over Action Item	
Action Item EO#55	Provide summary of watershed modeling issues for Work Group, with input from Work Group participants.
Responsible:	DWR
Due Date:	December 2002

Water Temperature and Rice Production Presentation

Cass Mutters researcher with the University of California Cooperative Extension presented the results of a multi-year study begun in 1999 to investigate the effects of water temperature on rice production in Butte County. The objectives of the study were to quantify the effect of low water temperature on rice yield and identify the causes and spatial extent of the low temperature effects. He established a grid of temperature monitoring and recording devices within two checks in an irrigated rice field and collected data continuously throughout the growing season. The rice field has a total of seven checks. He also monitored the water temperatures throughout Western Canal

and examined the use of remote sensing and mapping to estimate water temperatures and thermal gradients within fields.

Cass explained that the growing season for rice in the study area is May 1 to September 15 or roughly 140 days. The fields are flooded for 120 to 130 of those days. It takes about 4 days to flood a field and then additional flow is used to maintain a constant flow over the field to a depth of 4 inches. The checks, or subdivisions, within a rice field are delineated with levees and weirs designed to move the water in a serpentine direction through and between the checks. A field is laser leveled to achieve the desired water movement and direction.

Cass described the sensor locations within two checks and explained how he used a plot within the portion of the check furthest from the irrigation intake as the optimal field production value when determining percent yield reduction from temperature differences. He also plotted the relationship between water and air temperatures during critical rice development stages. He showed the participants remote sensing data indicating a temperature gradient extending from the irrigation intake south across the two checks. An area along the main canal and northeast corner of an adjoining check also showed cooler temperatures, which Cass suggested may be due to subsurface irrigation flow along an impermeable clay layer at shallow depth. A participant asked if the rice farmer could fallow the portion of the check nearest the intake. Cass responded that the farmers do not expect production from that area but if they allow it to go fallow, weed management becomes a problem with resulting increases in pesticide use and expenses. He found that the rice grown in the two checks is most sensitive to cold water during the first 60 days while water temperature has little impact late in the season.

Cass presented several slides describing water temperatures measured along Western Canal in May 2001, concluding water temperatures are low and do not vary for the first 15 miles and only begins to warm when it turns south and takes advantage of a large warming pond designated as wildlife refuge water plus some agricultural return flow.

He concluded that his preliminary results indicate rice has a mid-season threshold water temperature between 60 and 65° F, and yield loss due to low water temperatures can occur even at higher air temperatures. He added that remotely sensed images seem to correlate to measured spatial yield variability and the regional impact appears widespread. Curtis thanked Cass and said the information will be useful when looking at impacts associated with operational changes that may affect water temperatures at diversion points. The participants suggested that the presentation should be provided to the Environmental and possibly Recreation and Socioeconomics Work Groups. Terry Mills agreed that a focused presentation by Cass Mutters would be planned for the Environmental Work Group in the future. Cass added that he would have a report documenting his findings in early 2003; he will share the report with the Engineering and Operations Work Group.

Operations Graphics

Curtis Creel reviewed his presentation made to the Plenary Group on Project Operations (see Attachment 4 to this summary). He specifically wanted to review the pie charts included in that presentation that show water releases to various users by percentage of total releases. He explained that early in the water year releases are around 1,700 cfs, while during April to October releases drop to around 1,000 cfs. He confirmed that the State Water Project contractors are at the bottom of the priority list for water supply after DWR meets local water supply demands, instream requirements, downstream requirements, and flood control needs.

Modeling Update

Curtis reported that the temperature modeling team that is tasked with developing a temperature model met yesterday and looked at the system. Their goal is to develop a model that estimates

temperatures at diversion points of the Afterbay and can be used to compare to a base run. He also noted that the local operations modeling team is ready to begin development of that tool. One participant noted that the modeling summaries distributed were missing page 11. Curtis agreed to re-send the modeling summaries with the complete text and reminded participants that the Plenary Modeling Protocol Task Force has been reviewing these summaries also.

Next Steps

The Engineering and Operations Work Group agreed that their next meeting should include a portion dedicated to meeting jointly with members of the Recreation and Socioeconomics Work Group to discuss their modeling needs related to recreation. Curtis also suggested that the Plenary Modeling Protocol Task Force should meet via conference call before the next Engineering and Operations Work Group meeting to prepare for that joint discussion. The participants decided to reschedule their next Work Group meeting from December 13, 2002 to January 10, 2003. The watershed modeling discussion (carryover action item EO#55) will be scheduled for the January 10 meeting. They agreed to maintain the January 31, 2002 Work Group meeting date and decide on January 10, 2002 if it will be necessary to meet again later in January.

Next Meeting

The Engineering and Operations Work Group agreed their next meeting would be:

Date: January 10, 2003
Time: 9:30am – 2:00pm
Location: To be determined.

Action Items

The following action items were identified by the Engineering and Operations Work Group and include a description of the action, the participant responsible for the action, and due date.

Action Item EO#62	Provide electronic or mail versions of the two reference documents from 1994 and 1995 that outline hydrologic inputs to CALSIM II and the input demands from Bulletin 160 process.
Responsible:	DWR
Due Date:	January 1, 2003

Carry Over Action Item

Action Item EO#55	Provide summary of watershed modeling issues for Work Group, with input from Work Group participants.
Responsible:	DWR
Due Date:	January 2003